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Creating Effective Online Homework Problems in Algebra, Calculus, and Differential Equations
(Using WeBWorK). Preliminary report.

Many of us assign our students online homework problems in our courses. These online problems can be valuable learning tools, helping students spend more time practicing the skills and concepts we teach them. But are we assigning pedagogically well-designed problems or are they problems that only ask students to enter a final answer (e.g., limits, definite integrals, differential equations). Unfortunately, even our best students are tempted to use calculators (or Wolfram Alpha) to directly calculate these results, worrying about how to work out the problems later (if they find time). I believe we train students to do math problems in the way we assess them. Problems that only require a numerical (or even symbolic) answer that can be found easily using a calculator or a website train students to use these tools, but may fail to train them to work out the problems in the ways we show them in class and require on exams (showing clear work). Without help, students can also become frustrated in these one-answer problems when their answer is not accepted. I will present some of my attempts to address these issues in problems I have created or adapted using WeBWorK and propose some best practices for creating online homework problems for mathematics courses. (Received September 20, 2016)